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OUTDOOR ROSES IN CANADA

BY

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Experimental Farms Service

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OUTDOOR ROSES IN CANADA

CHAPTER I

VARIOUS CLASSES OF ROSES IN CANADA

HISTORICAL INTRODUCTION

The rose is probably the oldest flower in cultivation. We cannot tell when it was first introduced into gardens, but, in the Bible, in Greek mythology, and in the writings of the early Romans, frequent mention is made of its cultivation. There is neither description nor pedigree of these old roses, but about 450 B.C. Herodotus wrote of a rose with sixty petals, so that even by that date the rose had developed considerably from the five-petaled species which are native to Asia, Europe, and America.

Most likely these ancient roses were brought to Eastern Europe by trade caravans returning from China through India, and during its stay in India the species which we now know as *Rosa odorata* developed the habit of continued growth, and flower production from young wood, which distinguishes this species from all the others which bear one crop of flowers on wood of the previous year's growth. This character places on it the responsibility for the ancestry of all the modern everblooming roses.

Roses of to-day have been developed from a few natural species by a long series of crosses and selection. The progeny of these crosses have in turn been crossed, so that it is very difficult to tell in which class many of the modern varieties belong. A rose may be of Hybrid Tea parentage, and yet throw back so that it performs like a Hybrid Perpetual. Magna Charta, though introduced as a Hybrid Perpetual because of parentage, is really an improved *gallica* by performance. Sometimes it was expedient for the nurseryman to introduce a new variety as belonging to a fashionable class. For this reason J. B. Clark and Her Majesty were introduced as Hybrid Teas, though they are more like Hybrid Perpetuals.

Fashion has played a great part in rose development, particularly during the last century and a half. As each new class has become popular, a wave of new varieties has swept through our gardens, inundating the preceding class to near extinction. A brief discussion of these different classes may help to clarify a great deal of the rose terminology, which is rather confusing to the uninitiated.

CLASSES OF GARDEN ROSES

The old garden roses popular at the beginning of the nineteenth century were the *gallica* or Provins, and the *centifolia* or Cabbage, sometimes called Provence roses, which had been grown in Europe for centuries. To these the Crusaders had added the Damask rose. These roses are now almost extinct in the trade, though they may still be found in many old gardens, and deserve a more common place in Canada, because of their hardiness, fragrance, and the very good substance of their many-petaled blooms.

The Moss rose is another old favourite, a variation of the cabbage rose, which has a fragrant mossy growth of calyx. This also is hardy and still useful in low shrubbery.

About the beginning of the nineteenth century the China, or Bengal rose, *R. chinensis*, was introduced, and several seedling varieties of it developed. As such, this rose is now seldom seen but several of the common Hybrid Teas, such as Gruss an Teplitz and Mrs. C. E. Van Rossen, show evidence of their descent from it, in their increased hardiness.



A view of one of the rose gardens at the Central Experimental Farm, Ottawa.

In 1819 an apparent chance seedling of the Bengal with the Provins rose was found on the Ile Bourbon (Martinique), and introduced as the Bourbon rose. Many seedling varieties of this were raised, but, like the others, have passed into neglect. The only varieties at all common at present are Hermosa and Souv'de la Malmaison.

Late in the eighteenth century the pink tea-scented rose of China, *R. odorata*, was imported into England from India, and followed by its yellow subspecies about 1824. These, and their seedling varieties, were becoming very popular until supplanted by the more vigorous class of Hybrid Perpetuals. The Tea was the first truly ever-blooming rose, as well as the first introduction of yellow shades. The blooms were typically smaller and more pointed than those of the older classes, and had a characteristic weak neck. The class is tender, and although still grown commonly in warmer climates, can only be grown in very limited parts of Canada, such as Vancouver Island, the Niagara Peninsula, and parts of Nova Scotia.

Hybrid Perpetual.—About 1840 a new race of brilliantly coloured, vigorous growing, hardy roses appeared. They were crosses between Bengal, Bourbon, Provins, Cabbage and Damask; a mongrel race that surpassed anything yet known in ease of cultivation and were hailed as “perpetual” bloomers because

they frequently produced a second crop of bloom. Because of their increased vigour, hardiness and ease of cultivation, these roses are generally the most useful group for Eastern Canadian gardens. When well grown they have larger flowers of better texture and keeping quality than the more particular Hybrid Teas. The foliage of some varieties is susceptible to mildew but on the whole is less subject to disease than that of the Hybrid Tea. It is greatly to be regretted that this class has been so neglected by the hybridists and nursery-men during the past twenty years and one may look forward with pleasure to the day when this hardier class will return to put an end to many of the present day disappointments in rose growing.

Hybrid Tea.—In 1867, M. Guillot of France brought out the variety La France as a Hybrid Perpetual. This was a cross between Mme. Victor Verdier, (H. P.), and Mme. Bravy, (Tea), and was later recognized as the first of a new race. The original varieties of this class were quite hardy and vigorous but by continued crossing the vigour gradually decreased. Recently breeders have been going back to the original lines to recapture the early vigour.

The Hybrid Tea is essentially a bedding rose. Its chief attraction is continued flower production over a long period as it is truly a "perpetual" bloomer. For best effect, therefore, it should be used in masses. Because of the varied parentage, there is wide difference in vigour of growth. For this reason, care must be taken in planting so that low growing sorts, such as Mrs. Aaron Ward, are not planted in the same bed as tall ones like Betty Upchurch.

This class has been responsible for much of the disappointment in beginner's attempts at rose growing as, contrary to much of the current advertising, the Hybrid Teas are not hardy except in limited areas of Canada, and need careful winter protection.

So far, there had been no yellow Hybrid Tea roses, but the Austrian Brier, Harison's Yellow and Persian Yellow were well known. M. J. Pernet-Ducher of France was the first person to cross Persian Yellow and a Hybrid Perpetual and so started another new race, the Pernetianas with the variety Soleil d'Or in 1900. This class through constant recrossing has almost merged into the Hybrid Tea but its characteristics of yellow colour, small dark glossy foliage, and susceptibility to leaf spot are common in many of the modern Hybrid Tea varieties.

Polyantha Pompon.—While the Hybrid Teas were in ascendancy other classes were being developed. In 1875 Guillot Fils of France introduced the variety Paquerette, which was either a bud sport or a seedling of *R. multiflora*, a climbing Japanese species. This was the first of a number of dwarf growing, perpetual blooming varieties bearing flowers in clusters. They are known also as baby ramblers because so many of them are seedlings of *R. multiflora*, or *R. wichuraiana*, two climbing species. They are still popular as they are very useful for bedding purposes, being hardier than the Hybrid Perpetuals.

Hybrid Polyantha.—In turn, the Polyantha Pompons have been crossed with Hybrid Teas, *rugosa*, China or *R. wichuraiana*, to produce the new race of Hybrid Polyanthas or Floribundas made popular by the introductions of Mr. Poulsen of Denmark. These are prolific and continuous bloomers with single or semi-double scentless flowers. They are very useful for massed bedding effects.

Hybrid Rugosa.—About fifty years ago new varieties commenced to appear that were crosses between *R. rugosa* (the Japanese Fruiting Rose) and various other roses. Where the second parent was a Hybrid Perpetual the progeny has usually resembled the latter in bloom but in other respects has been a more vigorous shrub rose. Because of their hardiness they are very useful roses in Canada.

Climbers.—The history of climbing roses goes back about one hundred years to the varieties developed from the old musk and sempervirens roses. The first of these, *Félicité-et-Perpétue* was introduced in 1824 and is still found on rare occasions in old gardens. The early American varieties such as Baltimore Belle and Prairie Queen were hybrids between various garden roses and *R. setigera*, the native prairie rose. Of recent years American hybridists are returning to the *setigera* blood for the production of new varieties.

Most of the popular varieties are *R. multiflora* or *R. wichuraiana* crosses of which Crimson Rambler introduced in 1893 was the first.

The term "climber" as applied to roses is a rather poor one since roses do not climb in the ordinary sense but must be tied to whatever support is provided for them. There are several types of climbing roses:

(a) Climbers in which the wood is permanent and somewhat erect in habit due to *R. multiflora* or other more or less erect growing ancestry. Where climate permits, this type reaches higher and higher to cover large areas, as new growth starts each year from the terminus of the preceding year's growth. Flowers in this class are usually large and borne singly or in few-flowered clusters. Dr. W. Van Fleet and, contrary to its name, American Pillar are well known varieties of this type. Unfortunately, climbers can only be properly used in very limited parts of Canada.

(b) *Ramblers*, in which the wood is biennial. Here the flowers are usually smaller, and produced in clusters from wood of the previous season's growth, which should be removed immediately after blooming. Long slender canes of new growth start from the base each year to renew the plant. The height to which these roses grow is dependent on the amount of growth they can make in one season. Dorothy Perkins is probably the best known variety of this type.

(c) *Pillar Roses*, while erect in growth, are not strong enough growers to be classed as "climbers". Contrary to their names Paul's Scarlet Climber, and Crimson Rambler are of this type. The name "pillar" is used because of their usefulness to cover pillars or small trellises in milder climates. In cold districts "ramblers" are more useful for this purpose, as will be seen later.

(d) *Climbing Teas* and *Hybrid Teas* may be classed as pillars as they follow the same plan of growth. They are only useful in very limited parts of Canada.

Shrub Roses.—These are the various roses native to different countries, and their hybrids which are of a shrub nature. Some of these, such as the Scotch rose *R. spinosissima* have been cultivated for centuries and there are many geographical varieties of them, such as *R. s. altaica*. The Austrian Brier and its relations, the Persian Yellow and Harison's Yellow are other old examples.

Of recent years these species are becoming more popular by reason of their hardiness and usefulness in the shrub border. They are discussed at greater length in Chapter IX because of the important part they can play in Canadian gardens.

CHAPTER II

HISTORY OF ROSES IN CANADA

The history of the rose in Canada is almost as old as the settlement of the country and closely corresponds with the contemporaneous history of the rose in the various countries from which the settlers came.

The old French roses *gallica*, damask, *centifolia* and cinnamon were brought to Canada by the early French settlers. There were roses in the garden of the General Hospital in Quebec as early as 1690.

In the early eighteenth century the red damask, York and Lancaster, sweetbrier and Burnet roses were all popular in the State of Massachusetts, and were in all probability the roses brought to Nova Scotia in the early settlements of 1750 and 1760. Later, these same roses were brought into Ontario by the United Empire Loyalists.

Apparently roses were taken for granted in the early days and though references to them are found in diaries of early settlers, no one seems to have thought it worth while to discuss varieties or mention the origination. Roses were known by the name of the seigneury in which they grew or the family to which they belonged. As *gallica* roses cross and seed freely a great variety of them sprang up so that these old roses escaped from cultivation, or growing in old neglected gardens, show a great deal of variation.

The rose of the old homestead was carried afield by each daughter who went out into a new home of her own. Sometimes it retained the old name but if the new owner was generous with cuttings it took on the name of the younger generation so that the same rose may be found growing under several family or district names. This is particularly common in the Province of Quebec.

After the middle of the last century, with the improvement in transportation, and the increasing leisure that came with the pushing back of the forests, rose growing became a hobby. The old rose beside the door of the log house was given a special bed, or garden, and varieties were carefully collected and recorded, as they are with rosarians today. The stimulus to rose growing in Europe given by the introduction of "monthly" roses (Hybrid China and others) and Hybrid Perpetuals was felt in Canada, and in old articles we find that varieties appeared in Canada very soon after their introduction in France or England.

The earliest list of "best varieties for Canada" which the author has found was published with an article on roses in the Canadian Horticulturist for July, 1878. Even at that time there were so many varieties of "monthly" and Hybrid Perpetual roses that it was difficult to choose between them. It is interesting to note that two of these, John Hopper and Fisher Holmes, are still among the best Hybrid Perpetuals, but sad to see the names of grand old roses which have since passed into oblivion and remain only in memory. It is also interesting to note that Cheshunt Hybrid, the English forerunner of the Hybrid Teas, appears in this list of "monthly" roses so soon after its introduction.

The climbers on the list were Prairie Queen and Baltimore Belle. Queen of the Belgians (Ayrshire) was also recommended where it could be protected. The writer must have possessed keen enthusiasm as none but the most ardent would attempt to grow such tender though glorious old roses as Gloire de Dijon, Marechal Niel and Souvenir d'Uni Ami in the Ontario climate.

From Miss Margaret Eakins of Yarmouth, Nova Scotia, was obtained a list of the aristocrats of the Eakins' garden in the gay nineties. Among them the following still popular varieties occur:—

Alfred Colomb
American Beauty
Capt. Christy
Duke of Edinburgh
Fisher Holmes
Gen'l. Jacqueminot
Gloire de Dijon
Mrs. John Laing

John Hopper
Mme. Eugene Verdier
*Meteor
Kaiserin Victoria
Mme. de Watteville
Maman Cochet
Paul Neyron
Ulrich-Brunner

* Meteor, though not grown now, was heralded as the star of old rose collections in many catalogues. Many of its contemporaries have long outlived its popularity.

At this same time, 1895, we have our first list from the West from Mr. R. Layritz of Sardis, B. C.

Frau Karl Druschki
Mrs. John Laing
Paul Neyron
Juliet
Ulrich Brunner
Duchess of Wellington
La France

Marechal Niel
Gloire De Dijon
Maman Cochet
Marie Van Houtte
Wm. R. Smith
Papa Gontier
Gruss an Teplitz

So the rose in Canada has kept pace with the rose elsewhere due to the fickleness of rose fanciers who have always been willing to cast off old loves for new. Thanks to them our gardens are full of the newest and best that modern hybridizers have to offer. But, in our enthusiasm for newer shades and continued bloom we must not forget to be grateful for the constant love of the habitant farmer, and the descendants of the United Empire Loyalists, that has treasured and preserved the old hardy June blooming roses which so admirably suit our traditional types of colonial architecture. Because they fit our climate and tradition these old roses will always have a place in Canadian gardens.

CHAPTER III

THE USE OF ROSES IN THE LANDSCAPE

Because of its universal popularity the rose has always held an intimate place in Canadian gardens. When we recall roses it is usually ones which were planted along paths where we have strolled or ones which climbed over a pleasant garden shelter.

Garden roses, such as the Hybrid Teas, Hybrid Perpetuals, or the two types of Polyantha, have not an attractive habit of growth. They are, therefore, used to best advantage massed together in solid beds where their beauty of bloom may make the greatest show. This method of cultivation also suits their disposition as most of them refuse to grow vigorously in competition with other shrubs, though sometimes low plants such as violas may be planted between the roses to act as ground cover to shade the roots and act as a foil of contrasting colour to set off the beauty of their blooms. Also, as will be brought out later, the garden roses need a rather special site and care, so that they are best used in separate beds or gardens specially developed for them.

On small properties no special garden can be set aside for them but a separate bed or beds should be provided. These beds will show to best advantage when they border paths or are symmetrically arranged on either side of the main garden axis. Under no circumstances should garden roses be planted in a border among other plants.

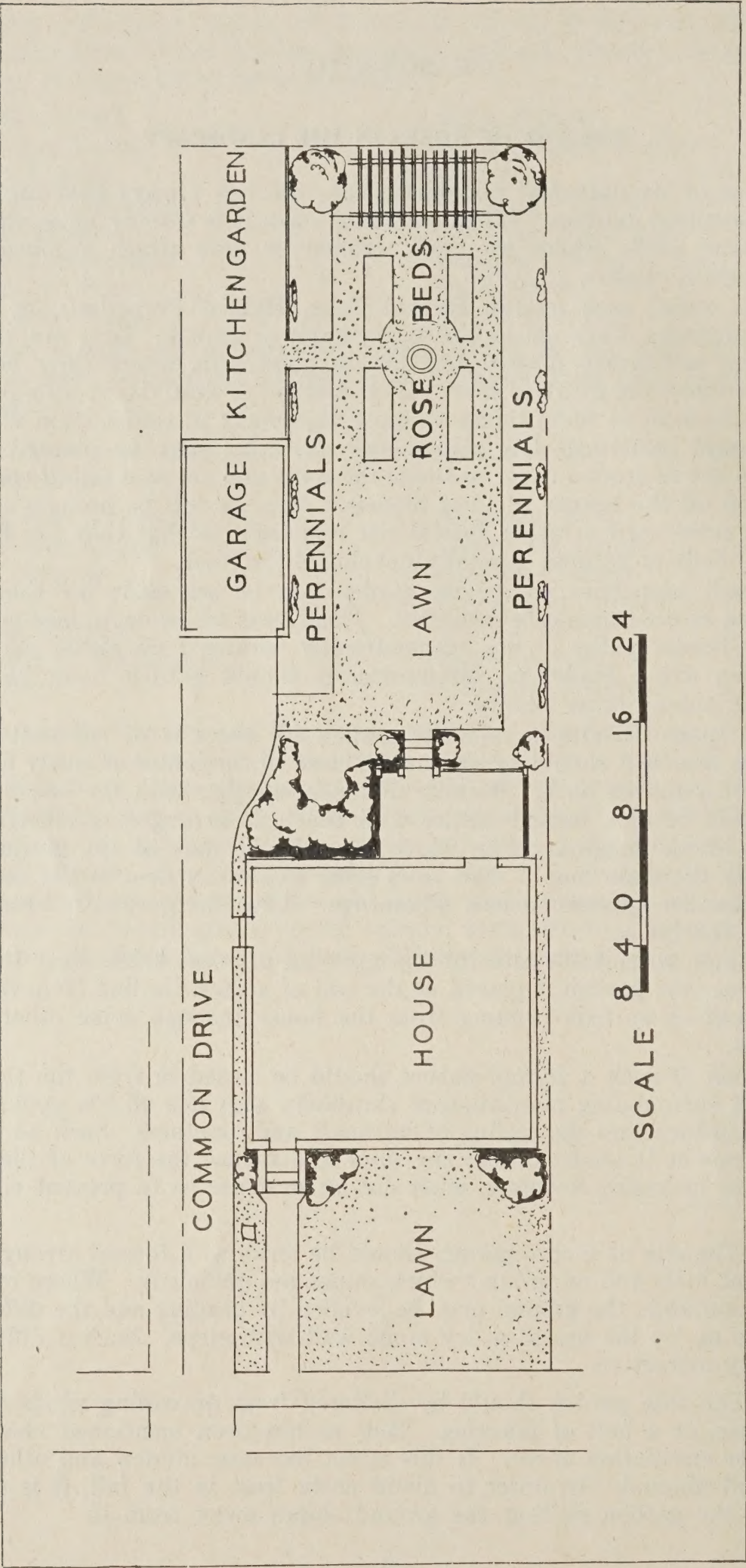
Where space permits, a separate garden for roses is of constant interest, and for this reason it should be preferably close to the house or easily accessible by means of a garden path. Because of its association with the house the rose garden should be of a formal nature with the beds arranged symmetrically on either side of an imaginary line which we call the axis of the garden. This axis is really the main line of view from some window or door of the house from which the garden appears to best advantage. Thus the garden is brought into unity with the house.

Sometimes no suitable site for the growing of roses exists near the house. In such a case the garden is placed at the end of a path leading from the house, or at the end of an axis running from the house through some other part of the grounds.

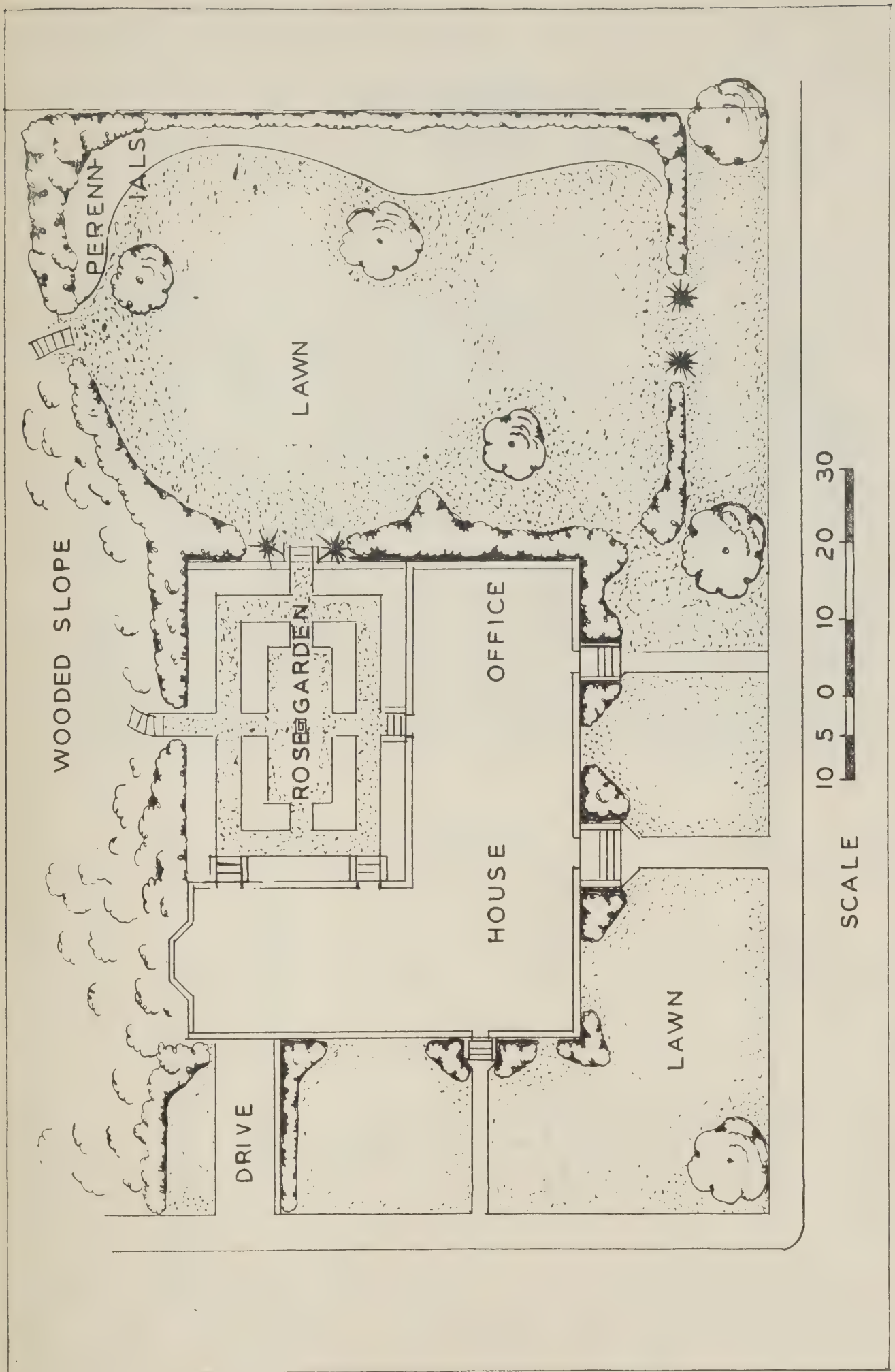
A garden of such a formal nature should be closed in from the rest of the grounds. A surrounding plantation of shrubbery also sets off the appearance of the roses and increases the feeling of intimacy and quietness. Such an inclosure suits the roses as it tends to hold the snow and reduce the force of the wind in winter. The inclosure, however, must not be so dense as to prevent circulation of air.

Site.—The site of such a garden should be level, as a formal arrangement of beds will not look well on ground which slopes too obviously. Where other conditions are suitable, the ground may be levelled by grading and the difference in grade made up by the use of a dry stone wall with steps. Such a difference in level is very attractive.

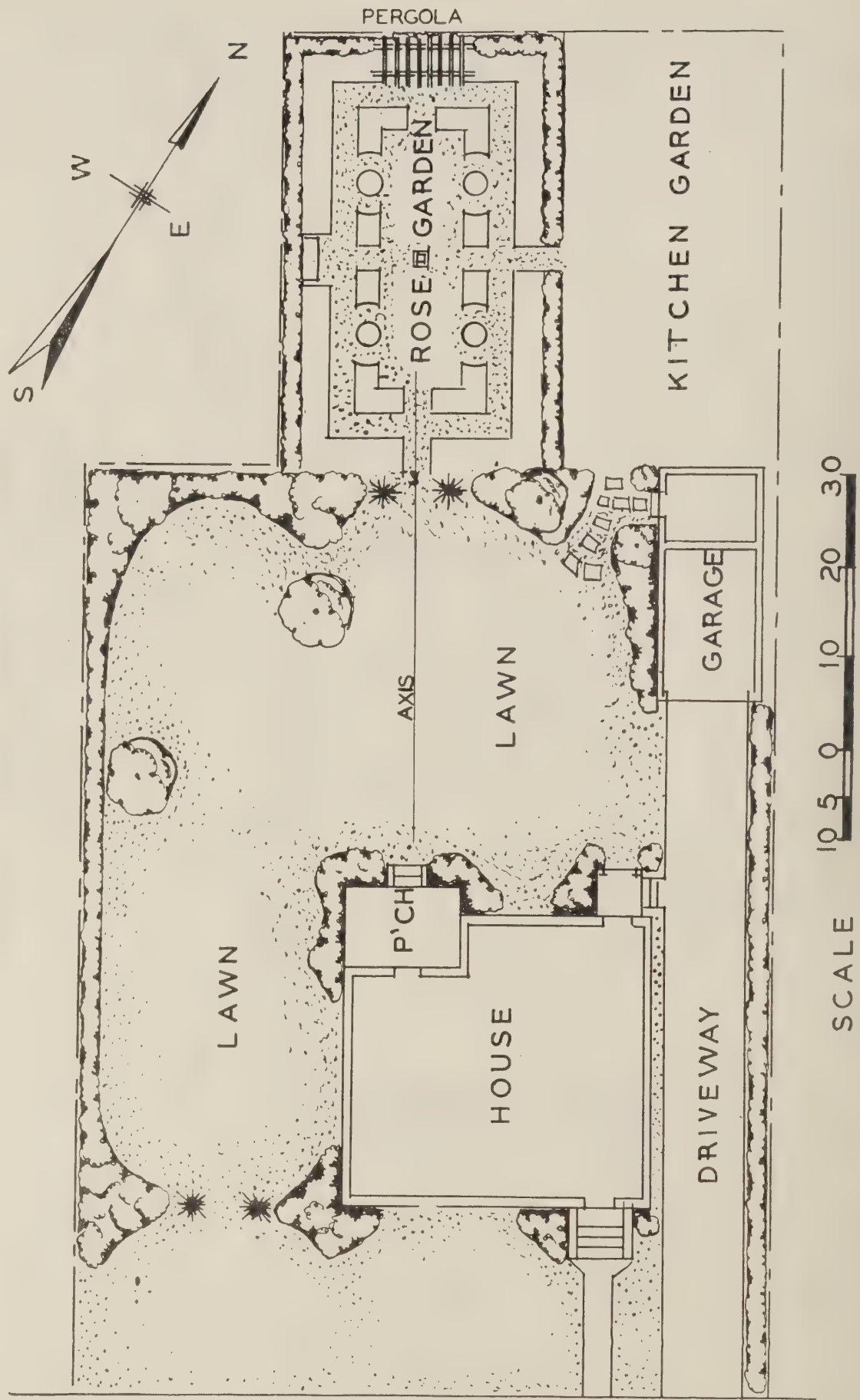
Air.—The rose garden should be sheltered from prevailing winds of winter by the house, or a belt of planting. But, as has been mentioned above, there must be free circulation of air. If this is not the case, mildew and other foliage diseases will abound. In order to avoid early frost in the fall, it is advisable to arrange the garden so that the ground slopes away from it.



Plan of small garden showing suitable position of rose beds.



Plan for a larger property, showing separate rose garden adjacent to the house.



Sometimes the rose garden must be placed farther away, in which case it should be linked to the house by a path or connecting axis.

Sun.—Roses require full or almost full sunshine to give best results. The garden must be placed with this in view. A little shade at mid-day, if possible, will enable the blooms to last longer, but this is difficult to arrange. Roses will not succeed where they have to compete with trees for food, moisture or sunlight.

In general, it may be said then that garden roses prefer a level spot on a south or east general slope which is protected from the prevailing winds.

Soil.—Soils and their preparation will be discussed later at more length. Roses, however, like a clay loam soil and this should be kept in mind when the site is chosen.



A rose garden on two levels.

Climbing roses are used in many ways. In the rose garden itself they may be used as part of the inclosure on treillage, or pergolas, or to cover garden shelters. Also they may act as accent points in the design when trained on pillars or arches.

In other parts of the grounds those of the rambler type may be used to make a solid mat on banks, or to cover arches. Pillar roses may be used on posts at regular intervals along paths or drives. Climbers may be used, where climate permits, to cover walls and fences, but wherever they are used one must be sure to provide for free air circulation. Even when supported on a trellis they must not be placed close to a wall from which much heat will be reflected, or they will suffer from foliage diseases and insects.

Use of Shrub Roses.—Roses of this type are rapidly gaining in popularity and deserve much more prominence in Canadian gardens than they have previously been given. Recently, a number of new hybrids have been developed in Canada and the Northwestern States from natural species, which are valuable additions to the shrub lists. The usefulness of such roses is chiefly in the shrub border where many of them give a longer period of bloom than most of the flowering shrubs. The various shades of foliage, and the highly coloured fruits in autumn, make them useful subjects for massing in the shrub border and they are particularly well set off by a background of evergreens. Like the garden roses they require plenty of sun and free circulation of air. As a class they are much hardier and need no protection. They fit excellently into the shrubbery border around the rose garden, or massed on gently sloping banks.

In general, they grow well on lighter soil than the garden roses, and should not be fed with nitrogenous manures.

CHAPTER IV

PREPARATION OF BEDS, AND PLANTING

Soil Requirements.—All classes of garden roses prefer a good clay loam soil. But all will grow well on lighter soils provided that the proper amounts of moisture, organic matter, and mineral elements are present and that the soil is neutral or slightly acid.

Drainage.—Roses require ample moisture but will not grow well on wet land. The first consideration, therefore, is proper drainage. Where the subsoil is heavy clay, or hardpan, drainage will be poor and steps must be taken to open it up by means of deep digging and drainage with land tile. Where gravel or sandy subsoil permits water to run away too rapidly, it is necessary to dig out the beds and add clay to the subsoil.

Manuring.—In preparing beds for roses a large quantity of organic matter must be supplied to provide humus and give the soil capacity to hold moisture. Manure is the best material to use for this purpose if it is well rotted. Horse manure will improve the texture of clay soil, while cow manure is preferable for sandy soil.

When good average drainage exists, the soil need only be removed to a depth of eighteen inches at most rose roots will not penetrate below that depth. In preparing the bed, the top spade depth of earth should be placed on one side of the bed and the lower spade depth on the other side. If the lower spade depth is poor it should be carted away and replaced with good earth as needed.

The bottom of the excavation should be thoroughly loosened with a fork before starting to refill the excavation with successive layers of manure and top soil at the rate of one inch of manure to three of soil. As these layers are put in they should be thoroughly turned with a fork. When all the original first spade depth of soil has been replaced the bed should be firmly tramped before starting to fill in the second spade depth. This should be mixed with manure as before, and, in addition, bonemeal should be added at the rate of two pounds per square yard of bed area. Only about half the second spade depth of soil is used, the balance being thrown away so that when the bed settles it will be a little below the level of the surrounding lawn. Such treatment will require one cubic yard of manure to each seven square yards of bed area. This allows thorough watering by rain, or with hose, without causing run-off.

Mineral Elements.—Roses require about equal amounts of nitrogen and potash, with high phosphorus supplied in their diet. The first two are supplied equally by manure, whereas the phosphorus content of manure is only about one-half as high as that of the other elements. This is the reason for the addition of bonemeal as mentioned above.

If manure is not available pulverized peat moss may be used in its place, mixed with a fertilizer containing 4 per cent nitrogen, 12 per cent phosphoric acid, and 4 per cent potash. This should be at the rate of two pounds to five square yards of bed.

Acidity.—In average soils when the proper balance of moisture and organic matter exists the acidity or alkalinity will be so close to neutral that no change need be made in order to grow roses successfully. However, if on analysis the soil is very acid, lime should be added at the rate of one pound per square yard for every unit of pH (acidity value) below 6.5.

If the soil is found to be alkaline in reaction ferrous sulphate may be added from time to time in solution to correct the effects of excessive lime on the plant. One to two pounds of the chemical applied to one hundred square feet of bed space should prove sufficient.

Time to Prepare Beds.—The best time to prepare beds is in the fall previous to planting in the spring. There are two reasons for this. The first is to save time in the spring so that planting can be done early. The second is because of the improvement to the texture of the loosened soil through the action of freezing and thawing through the winter.

Size of Beds.—The size of beds will depend on the class of roses to be grown, the number of roses it is intended to grow in each bed and the size of the garden. In the average garden the beds should be narrow enough so that each plant can be reached from the edge without stepping on the bed. A five-foot bed will hold four rows fifteen inches apart. A four-and-one-half-foot bed will hold three rows eighteen inches apart, etc. The length may be planned to fit the design and scale of the garden but one should remember that there is always a temptation to cut across a very long bed rather than walk around it.

Time to Plant.—Speaking of Canada as a whole the best time to plant is in the spring while the roses are still dormant. Fall planting is frequently advocated by writers from more temperate regions, and a few growers in the Niagara Peninsula and on the coast of British Columbia seem to prefer early fall planting. In most parts of Canada, however, the plants do not become sufficiently well established to withstand the severe winters even when carefully protected.

Type of Plant to Secure.—The propagation of roses is discussed elsewhere in this bulletin. When buying plants one should be careful to deal only with a reputable nursery firm, of which there are a number in Canada who are in a position to supply well grown plants. For best results one should secure two-year-old field grown plants budded on either *R. canina* or *R. multiflora* stock.

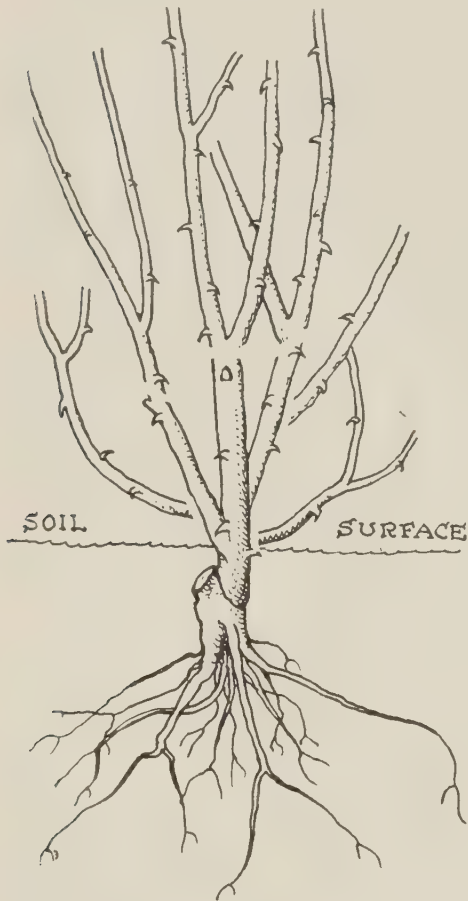
Treatment on Arrival.—As soon as the plants arrive from the nursery they should be unpacked and "heeled in", in some place where they can be protected from frost. That is, their roots should be placed in a trench and covered with earth, which is then firmly packed. If the roots appear to be dried out, they should be immersed in a tub of water, and if the tops also appear withered, the whole plant should be covered with earth for a day or two before planting. The plants should not be permitted to lie out on the ground exposed to wind and sun before or during planting. The roots should always be covered with wet burlap when out of the ground.

Distances Apart.—With all shrubbery, the tendency in the past has been to place the shrubs too close together. This creates a jungle of growth rather than a collection of individually graceful shrubs. This is particularly the case with many of the shrub roses which, if given room to develop naturally, are extremely graceful and different in form. Most of these should be planted four feet apart, though many of them will eventually want from six to eight feet for best development. Where hardy, the hybrid musk roses, or *R. Hugonis*, need ample room to form their blossom-laden mounds to good advantage. Only a few of the smaller growing species and hybrids can be placed as close together as two and a half to three feet.

For garden roses distances will vary with the climate and the variety. None of these except the Polyantha Pompons will make an attractively formed bush. They should, therefore, be placed close enough to form a solid bed, yet far enough apart to allow normal development. For Hybrid Perpetuals the distance is from two to two and one half feet apart. For Hybrid Teas, Pernetianas, and Hybrid Polyanthas which are to remain in the beds eighteen inches

is enough room, while twelve to fifteen inches is better if the plants are to be removed each fall and replaced in the spring as is common in the colder districts. Polyantha Pompons look best when allowed to form individual round bushes and should be spaced about two feet apart.

Climbers, of course, are usually placed at desired points on arches or pergola supports. When it is desired to make a solid covering on a fence they should be planted from six feet apart in the colder districts to twelve feet apart where true climbers can be grown.



Correct depth to plant and where cuts should be made at time of planting.

Pruning at Time of Planting.—When planting, the top of the plant should be cut back severely, removing all broken or weak canes, and those which interfere with each other. Strong growing varieties, such as the Climbers, Hybrid Perpetuals and a few Hybrid Teas, like Gruss an Teplitz, J. B. Clark, etc., should not have the remaining healthy canes headed back so severely as the weaker Hybrid Teas. Cut each healthy cane to a point just above a bud which points outward.

Root Pruning.—Roots, too, should receive attention at planting time. Any broken ones should be cut off cleanly above the break. Heavy ones or others which have been dried out badly should be cut back so as to promote development of fine fibrous roots.

Size of Hole.—The hole must be large enough to accommodate the roots without crowding. Frequently the roots of roses are curled up for convenience in packing. They must be separated and spread out naturally when the bush is planted. The hole must be deep enough so that the plant may be placed with the bud union an inch or more below the surface.

Actual Planting.—The plant should be held in the correct position with one hand so that the point at which the graft occurs is an inch or two below the surface of the ground. As fine loose earth is filled around the roots the plant is moved up and down gently. With the other hand this fine earth is worked in around the roots. When all the roots are covered the earth is firmly packed down and watered thoroughly. After the water has seeped into the soil the remainder of the hole may be filled. The earth must not be packed after watering.

CHAPTER V.

MAINTENANCE

Cultivation and Watering.—Success in flower production depends on healthy growth, brought about by a proper supply of moisture and food. Danger of winter injury can be lessened by inducing the plants to retain healthy foliage, and to ripen their wood early. These points determine the cultivation practices. They will, of course, vary with type of soil, amount of rainfall and length of growing season.

Manuring.—Though roses will not grow in soggy ground, they require an abundance of moisture to support healthy foliage and new growth. This makes the matter of holding moisture in the soil a very important one. In this connection organic matter in the soil is a necessity and rotted manure dug into the beds every spring is the best way to supply this organic matter and keep up moisture-holding capacity. One good forkful of manure per square yard of bed is sufficient.

If well rotted manure cannot be obtained, pulverized peat moss may be used in conjunction with chemical fertilizers. (See "Feeding" below.)

Mulching.—Moisture is also held in the soil by preventing its rapid evaporation from the surface by means of a mulch (loose surface covering). The most common method is to maintain a dust mulch by shallow cultivation of the surface with a Dutch hoe and rake after each rainfall. This also keeps down the weeds.

Other materials, such as grass clippings and strawy manure, have been used but they are not recommended. Of recent years pulverized peat moss is coming into popular use. Some growers recommend it highly while others condemn it just as vehemently. The experience at Ottawa, though too brief to justify any definite statement, would lead to the belief that if properly handled it would prove valuable. While it prevents evaporation of moisture from the soil it also absorbs a large amount of rainfall and prevents it from reaching the soil. It also slows down soil aeration. Its main advantage is its ability to absorb heat rather than reflect it, so that roses hold their foliage better during hot dry weather when beds are covered with peat. This would not apply where roses were planted thickly enough to provide their own shade.

It may be said then that peat will prove valuable if applied after the spring rains are ended and turned into the beds in early fall when bonemeal is added. This takes advantage of its good points while avoiding its bad ones. Turning in the peat adds to the organic matter.

Watering.—Sub-irrigation, if it can be provided for, is far superior to surface watering since it encourages the roots to go down where the soil is cooler instead of staying near the surface. Agricultural tiles inserted in the beds so that water can be poured into them from a hose is the easiest method of accomplishing this.

Above all, the roses should not be given a light sprinkling each evening, as is common. The hose should be allowed to run on the beds until they are thoroughly soaked, once a week, and the surface hoed afterwards. Spraying the foliage in the evening assists the spread of mildew and washes off insecticides and is therefore to be avoided.

Feeding.—It has been stated earlier that well-rotted manure should be forked into the beds each spring. This has high feeding value as well as mois-

ture-holding capacity. Mention was also made that the peat mulch could be turned into the soil in the early fall along with an application of bonemeal at the rate of one pound to five square yards. Also, in the fall a scattering of hardwood ashes may be applied to provide potash. For average garden purposes this is all the feeding program necessary if the beds have been well prepared. For convenience, a complete chemical fertilizer containing 4 per cent nitrogen, 8 per cent phosphoric acid and 8 or 10 per cent potash, may be applied at the rate of two pounds per five square yards late in the season to replace the bonemeal and hardwood ashes.

Where extra long stems are required, and winter injury is not a problem, a heavier program of feeding may be followed but is not necessary for ordinary cultivation. A light dressing of about one-half ounce of ammonium sulphate per plant may be applied with the manure in spring, followed by fortnightly applications of 4-8-8 fertilizer until July first, at the rate of one ounce per plant, or liquid manure may be used. It is always necessary to water heavily after each application of fertilizer.

Ripening the Wood.—In order that the roses should come through the winter well, it is imperative in any part of Canada that the wood should be well ripened before winter sets in. For this reason it is essential that the plant should not be encouraged to prolong the season of active growth. Summer feeding tends to prolong this season of growth and is therefore not desirable for general garden purposes. In any case, from the first to the middle of July should be the latest date at which fertilizer is applied, varying with the district.

Summer pruning through the removal of flowers should also be reduced as the season advances, by cutting with shorter stems. Cutting with long stems stimulates growth of new wood which will be killed if not ripe.

Water also may be cut down, either by reducing the artificial supply or by increasing the loss, through evaporation, by packing the surface of the beds.

Spraying.—Although insects and fungus diseases are discussed elsewhere, a brief spraying program may be outlined here. The best means of control for foliage diseases seems to be a spray in fall or spring when the wood is dormant with one gallon of lime sulphur to ten gallons of water. This is followed by keeping the foliage constantly dusted through the summer with powdered sulphur or one of the commercial dusts especially prepared for the purpose and which usually contains nicotine as an insecticide.

Pruning.—The pruning of roses at the time of planting has already been discussed. With garden roses and climbers, however, pruning is an annual occurrence which must be done and well done if good results are to be obtained. In many parts of Canada, winter does so much pruning that it is only necessary to clean out the dead wood in the spring, but for those who live in more favoured districts, it is wise to know why and how to prune the various classes.

The object of pruning is to promote healthy, vigorous growth, which will bear the maximum number of high quality blooms. The wood of most roses is short lived. When more than two years old it becomes hard and bears small foliage and small flowers, with shorter stems. Severe pruning forces new long succulent growth, with large, though fewer, flowers. Severity of pruning, then, depends on the natural vigour of the variety. The more vigorous a variety is naturally the less pruning it will require. Time of pruning depends on whether the plant bears flowers from wood of the previous season's growth or whether flowers are produced at the end of growth of the current season. In the first case pruning is done just after blooming; in the latter, early spring is the correct time. This means that each class is pruned somewhat differently.

Shrub Roses. The wood of most of the shrub roses may be considered as more permanent than that of other classes. Most of these are sufficiently hardy

to withstand Canadian winters so that the new growth starts from terminal and lateral buds on last year's wood, as it does with most of the flowering shrubs, and flowers are borne on wood which grew the previous year.

For these reasons they are pruned just like other shrubs, by removing only the oldest branches after the dead wood has been cut out. These should be cut out as close to the ground as possible and the season is just after the blooming period. In species which have attractive fruit the pruning may be delayed until after the fruit is shed. This may be the wisest procedure in very cold districts where summer pruning would prolong the period of active growth to the point of danger from winter injury.

Hybrid Perpetuals, Moss and other "June" roses, all require about the same treatment. The first step is to remove all dead or damaged canes and weak growth. Then to cut out any canes over two years old close to the ground, as well as any canes which interfere with each other. This will usually leave from four to six healthy canes well spaced. In general, these should be cut back to within twelve to eighteen inches of the ground, with the cut made just above a bud which points outward. The height to which these are cut back depends on whether the objective is a large, many-flowered bush, in which case longer stems are left, or to obtain exhibition blooms, in which case the bush is cut back more severely.

Hybrid Teas, Pernetianas and Hybrid Polyanthas. These are all pruned in the early spring, in a manner similar to that used in pruning Hybrid Perpetuals, only more severely. Only three or four healthy canes of last year's growth are left and these are cut back to within a few inches of the ground.

Polyantha Pompons require little pruning beyond the removal of dead wood in the spring. The object is to promote the growth of a round-headed bush covered with bloom so that only those branches which are growing beyond bounds should be headed back to keep the symmetrical shape.

Teas. Where Teas can be grown in Canada they require little pruning except the removal of dead wood and an occasional old branch.

Climbers. Since climbers vary in habit of growth they must be subdivided again. The true climbers, such as Dr. W. Van Fleet, New Dawn, etc., need to have only the dead wood removed and enough of the old branches thinned out to prevent them from getting too thick. Laterals should also be cut back.

Ramblers bloom only from wood of the previous season's growth. As this wood is useless after producing one crop of flowers it should be completely



Hybrid Tea before and after pruning.



Hybrid Perpetual before and after pruning.

removed close to the ground as soon as possible after flowering. The young shoots which by this time will be from three to five feet long are then thinned out and tied up to the supports.

When proper summer pruning is carried on the only spring pruning necessary is to remove dead wood and to shorten stems that are too long.

CHAPTER VI

HARDINESS AND WINTER PROTECTION

As has been stated in the previous chapter, half the battle against winter injury is won if the plants enter the winter in well ripened condition. This depends on good cultivation practices and on the amount of rainfall in the late summer and fall.

Winter injury is caused by drying out of the wood and by freezing and thawing rather than by actual cold. Unripened wood is more susceptible to both types of damage than ripened wood. Insulation of some sort is needed against drying winds and against variations of temperature. The amount of insulation needed then depends not only on local winter climate but upon the condition of the plants at the time winter sets in. Snow is, of course, the best insulation and every effort should be made to keep a good covering of snow over the beds.

Type of winter protection will consequently vary in different sections of the country, and for this reason the map on the following page has been prepared showing four different zones. These zones are general, based solely on information received from rose growers throughout the country. There will be sheltered spots within a zone which will require less protection and there will be exposed spots where more protection will be needed.

Zone I: The unshaded areas are those in which the climate is too severe for the successful wintering of Hybrid Perpetuals and Hybrid Teas in permanent beds. In this zone shrub roses, (see Chapter IX), are the most useful and climbers are not recommended. Hybrid Teas and Hybrid Polyanthas are the most useful of the garden types but they should be dug up in the fall, wintered over in a trench or pit, and replanted in the spring.

Zone II: The dotted areas represent the sections where Hybrid Perpetuals need mounding up with earth and covering with brush. Hybrid Teas and Climbers need even more careful protection. In this zone shrub roses in general are hardy, Hybrid Perpetuals, Polyantha Pompons, and the rambler type of climber, are recommended.

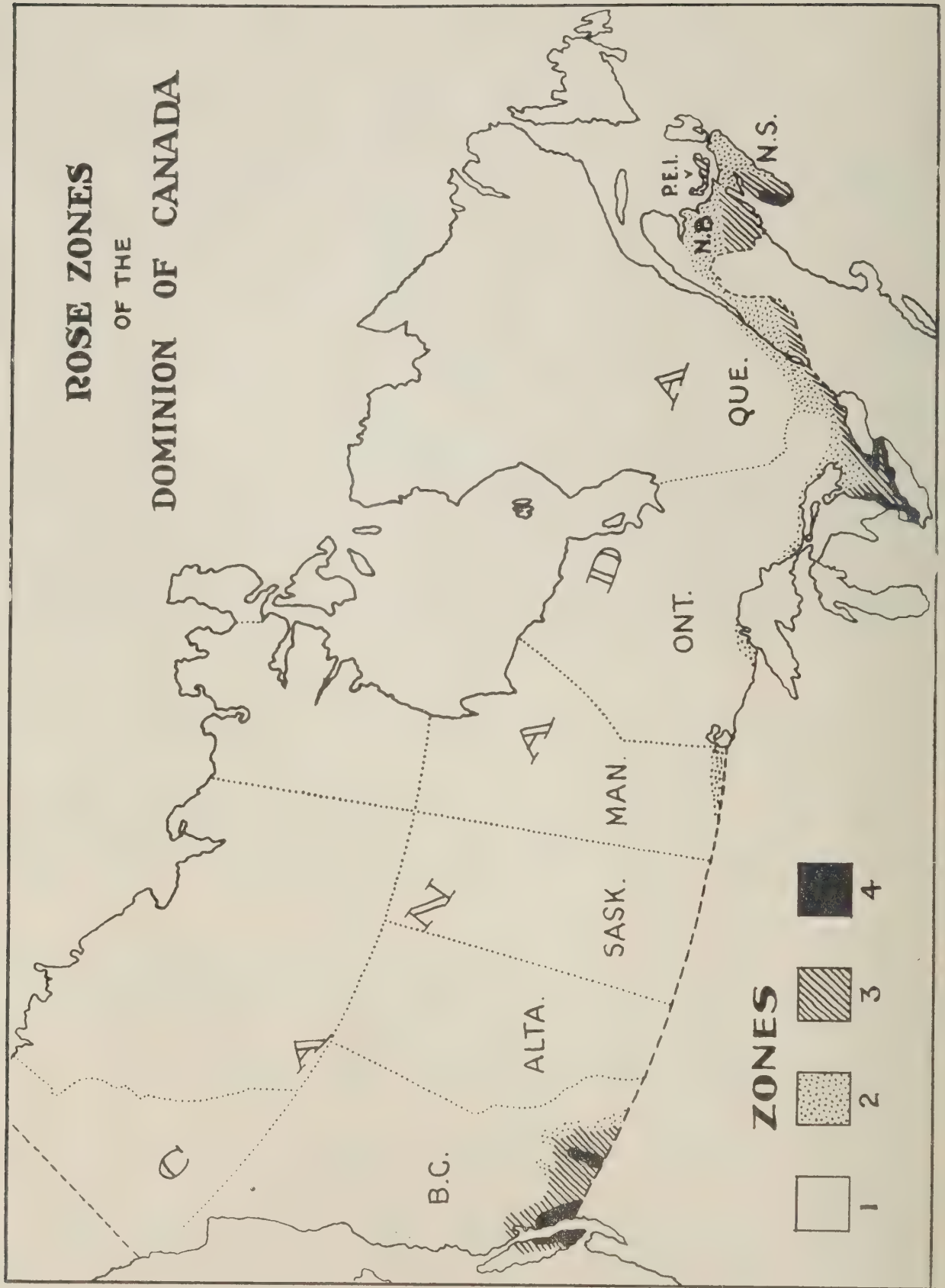
Zone III: The cross-hatched areas are those in which Hybrid Perpetuals need only to be mounded, where Hybrid Teas and Teas need only mounding and covering with brush or strawy manure, and where only the tender climbers need taking down and covering with brush. Here also, standards can be grown.

Zone IV: The solid black areas represent those rare spots where no protection is necessary except for Teas.

From this map it will be seen that protection is necessary for the garden types in almost all of Canada where roses are grown.

Mounding.—Because of the fact that most of the tops of the plants will be removed by spring pruning, it is most necessary to protect the base of the plants. This is best done by mounding up soil around the plants to a height of eight or nine inches. Where plants are close together this soil should be brought in, as taking soil from between the plants will expose the roots. If soil is taken from the beds the depressions should be filled with rotted manure which can be turned under in the spring.

Further protection.—After mounding, the roses should be left until the ground has frozen, and then covered with evergreen branches, such as spruce,



to hold the snow. In Zone II Hybrid Teas may be laid down by digging away on one side, bending them over, and mounding over all except the tips of the branches before covering with branches. Or, they may be mounded up and covered with inverted wooden troughs.

Protecting Climbers.—Climbers are taken down from their supports, the branches tied together and laid on the ground. In Zone III brush is sufficient covering but in Zone II boxes with rubberized roofing tops should be placed over them and filled with dry leaves.

Whatever covering is put over roses one must be sure that it will not sink down into a soggy wet mass around the stems to cause mould. A certain amount of air must also be provided for by having holes in the ends of boxes or troughs.

Pits and Trenches.—Where the climate is too severe to successfully winter roses in the beds they should be dug up in the fall and buried in a trench or pit. Trenching consists of placing the roses in a trench two to three feet deep and covering all but the tips with earth. Where a pit is used, the roses are packed into the bottom of a pit about three feet deep with moist moss or earth around the roots. A board cover is put over the top and earth banked over it, or they may be packed in a box and the box buried. Roses in such districts may also be "heeled in" in the dirt floor of a storage cellar. Such pits and trenches must, of course, be adequately drained to prevent water from standing on the plants and freezing.

Mice.—Though not mentioned above, mice are responsible for a great deal of damage to roses during winter. Recently experiments have shown that cubes of cut apple dusted with zinc phosphide and placed in the runways are most effective against mice. Care must be taken not to touch the powder with bare hands. Scattering poisoned grain among the leaves is also good protection. One ounce of lead arsenate dusted over half a bushel of grain and thoroughly mixed should prove effective.

CHAPTER VII

PROPAGATION

Plants of varieties of roses for outdoor cultivation are reproduced by budding, or from cuttings of half ripened wood. The first method consists of grafting a leaf bud of a commercial variety on a hardy rootstock of some "wild" species. This is the method used for most garden roses as they do not seem capable of producing vigorous plants when grown on their own roots except in the mildest districts.

There has been much discussion on the subject of the best rootstock for roses. For outdoor cultivation *R. canina*, the wild briar of Great Britain, and *R. multiflora*, a native of Japan, are the most popular.

The former takes a longer time to become established but once its roots become firmly placed it produces a hardier, longer lived plant which ripens earlier in the fall, and consequently avoids a lot of winter injury. For these reasons it is more popular with growers in district where roses are wintered over in permanent beds.

R. multiflora is much more vigorous and quick to start. It is therefore preferred by nurserymen and growers who dig up and trench their plants for the winter.

The rootstocks are usually imported from Europe or the United States in the early spring and should be planted in the nursery immediately, about nine to twelve inches apart in rows three feet apart. The soil should be kept well cultivated so as to induce the plants to start into growth promptly as an abundance of sap is needed at the time of budding to facilitate the turning back of the bark. For the same reason it is better to hill the earth up around the stems to keep the bark soft.

If stocks are grown from seed it should be sown in autumn in a specially prepared seed-bed in rows about six inches apart. The young plants will appear in spring, and if well cultivated, will be a good size by fall. Early in the following spring they should be transplanted into nursery rows just as are the imported stocks. Plants should be confined to one main stem but all lateral branches should be left.

Time to Bud.—The time for budding varies with the season and with the locality but the stocks should be in proper condition between the middle of July and the first of September. Budding may be started as soon as good buds can be obtained. Stocks are in proper condition at any time until growth becomes so slow that the bark cannot be turned back without splitting. The buds are in condition when they are well developed, but dormant, and the wood on which they are borne is firm and half ripened.

Method of Budding.—At the proper season "bud sticks" are cut from the varieties one wishes to propagate. That is, sticks containing several suitable buds. The leaves are trimmed off immediately, leaving a portion of the leaf stalk protecting each bud. The sticks are then placed in wet burlap, or moss, to keep fresh until they are needed.

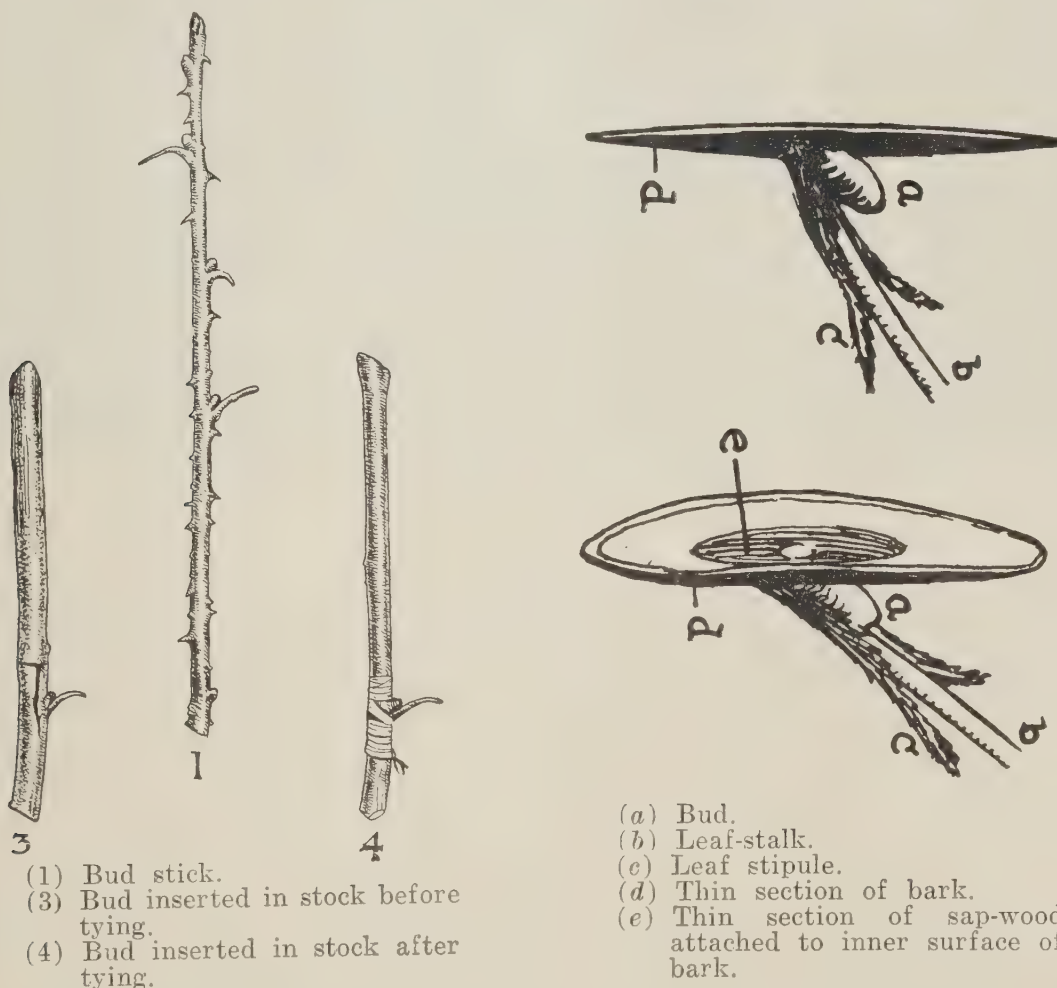
The stocks are now prepared by clearing away the soil from the stem to a depth of about two inches below the surface, or as near the roots as possible, and by removing any low lateral branches that may be in the way.

A vertical cut is now made about an inch or more in length low down on the north side of the stem of the stock. This cut should be just deep enough to penetrate through the bark to the wood. A second cut is now made crosswise

at the top of the first, to form a T. A special knife is used for this work which has a thin ivory blade at the opposite end to the cutting blade. This ivory blade is now used to turn back the corner flaps of bark beneath the cross of the T to receive the bud. The bud is now cut from the bud stick with a shield of bark, about an inch long, attached to it, and containing as thin a sliver of wood as possible. This wood is removed with a quick jerk, otherwise the bud may be damaged. The bark of the shield is now trimmed to the proper length and the shield slipped under the bark of the stock, using the piece of leaf stalk as a handle and raising the bark with the ivory knife blade held in the other hand. The bud, of course, must not be allowed to dry out during the process. The bud shield must be held in place by raffia, or rubber bands which are made for the purpose, wrapped tightly around the stem just below and above, but not covering the bud.

In a few weeks the bud will have united with the stock and the wrapping should be cut away to prevent checking the flow of sap. Early the following spring the stock is cut back to a point three or four inches above the bud. Care must be taken to protect the shoot growing from the bud by tying it to a stake, or it may be broken off. As soon as growth is well started, the remaining stub of the stock is cut off flush with the union and all growth from the stock is discouraged. Plants will be ready to transplant into the rose garden the following year—second season after budding.

Budding Standard Roses.—Budding for standard roses is done much as for ordinary ones. Buds are inserted close to the main stem on two laterals of the current season's growth which spring from the main stem at the desired height. As soon as the union is complete the top of the stock is cut back just as in budding ordinary roses.



Propagation from Cuttings.—The average amateur will not usually propagate his own plants by budding, but many will use the cutting method of developing new plants. Climbers of the rambler type, Polyantha Pompons,

and Hybrids, and many of the species, can be propagated in this way successfully. The best success is obtained by taking cuttings of half ripened wood in July or August. Cuttings are taken with a "heel" or small piece of older wood at the base. Remove all leaves but the two nearest the top and plant in coarse sand in a closed cold-frame. Where one desires to root only a few cuttings, it is best to take a six-inch flower pot and put a plug in the hole in the bottom so that water cannot leak out. Some pieces of broken flower pot or stones are then placed in the bottom of a nine-inch pot, with some sand on top, and the six inch pot placed inside it so that the top of the six-inch pot is half an inch lower than the top of the nine-inch pot. The space between is then filled with sand and the cuttings planted. The six-inch pot is kept filled with water to provide constant moisture in the air surrounding the cuttings.



A simple method of rooting cuttings when only a few are required.

Layering.—Some varieties of roses can be increased by layering. This consists in bending down the branches and covering the bent part with from four to six inches of soil, leaving the tips above ground. In time, the branch will root where it is bent, and the rooted part can then be cut off and planted. Rooting is more rapid if the branch is cut part of the way through at the base of a bud which is to be covered with earth and the cut held open with coarse sand.

Suckers.—Many roses which are on their own roots, such as Harison's Yellow, the *gallica*, and cabbage roses are easily propagated by digging up and planting the rooted suckers which spring up around them.

CHAPTER VIII

SELECTION OF VARIETIES

There are thousands of varieties of roses and hundreds of them are good. It is therefore impossible to give a list of the "best twelve" for all situations and to suit all tastes. The class of rose—Hybrid Perpetual, Polyantha, etc.—to be grown will be determined by the climate of the district and by the particular effect desired. After the class has been determined, vigour of growth, hardiness, disease resistance, whether one desires cut flowers or garden effect, colour of bloom, etc, must all be considered. Finally, personal preference will be the deciding factor.



Frau Karl Druschki is still the favourite white rose.

The following lists of good varieties are presented here as a safe guide to the beginner who is not sufficiently acquainted with varieties to know which ones he prefers. Questionnaires were sent out to prominent rose growers in all parts of Canada asking them to list what they considered to be the best six varieties in each class. The lists have been compiled from thirty answers to these questionnaires. Such a method of selection naturally gives more prominence to old favourites and for this reason a few of the newer varieties of special merit have been added. These are marked with an asterisk. The second column in each list shows the number of people who placed the variety in their list of the best six.

Few people had a sufficiently wide knowledge of shrub roses to commit themselves to any but the old standbys. For this reason it was thought advisable to devote a special chapter, (Chapter IX), to their description in order to stimulate interest in these very worth while additions to our shrubbery.

HYBRID PERPETUALS:

Variety	Votes out of 28	General colour
Capt. Hayward.....	9	Light crimson
Candeur Lyonnaise.....	4	White to sulphur
*Felberg's Rose Druschki	4	Rosy pink
Fisher Holmes.....	5	Scarlet crimson
Frau Karl Druschki	25	White
General Jacqueminot	7	Rich crimson
George Ahrends.....	9	Delicate pink
George Dickson.....	5	Scarlet crimson
Heinrich Munch	4	Soft pink
Henry Nevard.....	4	Crimson scarlet
Hugh Dickson.....	21	Bright crimson
Magna Charta.....	7	Bright pink carmine
Mrs. John Laing.....	24	Soft pink
Paul Neyron.....	5	Clear rose pink
Ulrich Brunner	15	Geranium red

CLIMBERS:

Variety	Votes out of 23	Type	Colour
American Pillar.....	10	Climber	Brilliant pink
Climbing American Beauty.....	5	Rambler	Deep rose pink
Blaze.....	4	Pillar	Scarlet
Crimson Rambler.....	4	Climber	Crimson
Tausendschon.....	6	Cl. H.T.	Pink
Dorothy Perkins.....	6	Rambler	Pink
Dr. W. Van Fleet.....	6	Climber	Pink
Etoile de Hollande.....	3	Cl. H.T.	Crimson Scarlet
*Golden Climber.....	4	Cl. H.T.	Yellow
Lemon Pillar.....	3	Pillar	Lemon
Mme. Gregoire Staechelin.....	4	Cl. H.T.	Delicate pink
Mary Wallace.....	3	Climber	Pink
New Dawn.....	8	Climber	Pink
Paul's Scarlet.....	16	Pillar	Scarlet
*Patricia Macoun.....	3	Rambler	White
Silver Moon.....	3	Rambler	Creamy white
*Dobloons.....	3	Climber	Yellow

POLYANTHA POMPONS

Variety	Votes out of 29	Colour
*Cameo.....	3	Shell pink
Coral Cluster.....	3	Coral pink
Eblouissant.....	8	Dark red
Gloire du Midi.....	3	Brilliant orange salmon
*Gloria Mundi.....	11	Brilliant orange salmon
Golden Salmon.....	4	Orange salmon
Jeanne d'Arc.....	3	White
Katharine Zeimet.....	5	White
Miss Edith Cavell.....	7	Scarlet
*Paul Crampel.....	4	Orange scarlet

HYBRID POLYANTHA (according to National Rose Society, England).

Variety	Votes out of 29	Colour
Aennchen Muller.....	4	Warm rose
*Anne Poulsen.....	3	Scarlet crimson
*Betty Prior.....	3	Carmine
*Donald Prior.....	3	Bright scarlet
Ellen Poulsen.....	9	Cherry pink
Else Poulsen.....	17	Rose pink
Gruss an Aachen.....	8	Salmon to white
Karen Poulsen.....	7	Brilliant scarlet crimson
Kirsten Poulsen.....	6	Brilliant scarlet crimson
Orleans Rose.....	4	Rosy crimson white centre
*†Poulsen's Yellow.....	3	Yellow
*†Snowbank.....	3	White
Yvonne Rabier.....	3	White

HYBRID TEAS AND PERNETIANAS:

Variety	Votes out of 27	Colour
Barbara Richards.....	3	Yellow buff to rose
Betty Uprichard.....	12	Carmine to pink
*†Carillon.....	3	Orange to coral
Countess Vandal.....	6	Coppery bronze
*Crimson Glory.....	6	Velvety crimson
Dainty Bess.....	4	Single rose
Dame Edith Helen.....	4	Clear pink
Etoile de Hollande.....	18	Bright red
General McArthur.....	6	Tyrian rose
*†Goldenes Mainz.....	5	Yellow
Gruss an Teplitz.....	4	Dark velvety scarlet
*Gloaming.....	4	Orange to salmon
J. B. Clark.....	3	Intense rich scarlet
Joanna Hill.....	4	Deep yellow
Lady Forteviot.....	3	Yellow to apricot
Los Angeles.....	5	Coral pink to gold
McGredys Ivory.....	4	Ivory
*McGredys Sunset.....	4	Yellow with scarlet tips
McGredys Yellow.....	3	Yellow
McGredys Scarlet.....	3	Scarlet
Mme. Butterfly.....	9	Salmon to yellow
Mme. Caroline Testout.....	6	Satiny rose
Mme Edouard Herriot.....	6	Coral red to yellow
Mrs. A. R. Barraclough.....	4	Soft Carmine pink
Mrs. G. A. Van Rossen.....	3	Deep apricot to bronze
Mrs. Henry Bowles.....	5	Rose pink to salmon
Mrs. Henry Morse.....	8	Bright silvery pink
Mrs. Sam McGredy.....	6	Orange salmon to gold
*Phyllis Gold.....	3	Rich Yellow
President Herbert Hoover.....	4	Orange to lighter
Rapture.....	4	Deep pink to yellow
*Rex Anderson.....	4	Pale yellow to white
*†Rochester.....	3	Pink to coppery buff
*Rome Glory.....	3	Crimson red
Sir Henry Seagrave.....	5	Primrose yellow
Shot Silk.....	3	Cherry to golden yellow
*†Smiles.....	3	Salmon pink
Southport.....	3	Brilliant scarlet
Souv. de Claudius Pernet.....	3	Yellow
Talisman.....	7	Golden yellow to copper
Wm. Orr.....	3	Deep velvety crimson

*Comparatively new roses not yet widely grown, which deserve more points than they received.

†“Floribunda” roses these are hybrids with tea and polyantha characteristics, some in England are classed as H.T. some as H. Poly. They are excellent roses for massed bedding.

Many new varieties which are widely advertised do not appear in the above lists as they are not sufficiently tested or widely grown to receive the approval of the growers answering the questionnaires.

CHAPTER IX

HARDY SHRUB ROSES

This group consists of: (a) Natural species of Asia, Europe and America, all of which had originally flowers with five petals, borne on wood of the previous season's growth and followed by brown, black, or red fruits. (b) Hybrids between two or more of these native species which still retain their shrub-like character and hardiness, though some of them have developed semi-double flowers and may have lost their fruiting habit.

Because of their hardiness and attractive appearance this group is very valuable in Canada as it provides a wealth of material for the shrubbery border, which creates a great show in June and July when in bloom and again in autumn when the brilliantly coloured fruits and foliage of many sorts give life to the garden. All through the summer the varying greens and types of their foliage enable us to have an attractive contrast of colour and texture by proper grouping of the many desirable sorts.

NATURAL SPECIES.

In a bulletin of this sort one cannot, of course, describe any of the species in detail, nor attempt to describe all of them briefly. The following descriptive notes deal only with the most commonly grown and useful of these roses in Canadian gardens. Many of these cannot be procured from Canadian nurseries, though the supply is rapidly increasing and will continue to do so as a demand is created for them.

R. acicularis, Lindl. A native of northern Canada, this is one of the hardiest and earliest to bloom. It forms a low compact shrub to three feet in height and has dark pink blooms, followed by waxy pear-shaped red fruits about an inch long.

R. blanda, Ait. Native from Newfoundland to Manitoba. It suckers freely and forms a mass of canes to a height of about six feet. The red-brown wood is almost free from spines and thorns. The large pink flowers are usually solitary and are followed by subglobose fruits about one-half inch in diameter. It is one of the hardiest.

R. carolina, L. Native to Ontario and Maritimes. The young stems are usually very bristly, becoming smoother until the old ones are almost bare. It suckers badly and forms a mass of canes about three feet high. The large rose-coloured flowers are borne singly and followed by small fruits.

R. centifolia, L. The old "cabbage" or hundred-petaled rose has travelled far from its original species, whatever that was like. But it is still sufficiently hardy and vigorous to be classed as a shrub rose. It is quite similar to *R. gallica*, though taller. The very double pink flowers are borne on nodding stems and the petals are turned in over each other like the leaves in a cabbage. The variety *muscosa*, Ser., the Moss rose, has a fragrant mossy growth of calyx.

R. cinnamomea, L. The Cinnamon rose has long been cultivated in Europe and its double form, which is the only one grown in gardens, was brought to Canada by the early French settlers and is found now throughout the province of Quebec. It forms a gracefully arching shrub to six feet with pink flowers.

R. damascena, Mill. The Damask rose has been cultivated for centuries for its palest pink to red flowers born in nodding clusters. The variety *versicolor*, the old York and Lancaster rose, has semi-double flowers with white and pink ones borne on the same bush.

R. eglanteria, L. (*R. rubiginosa*). The sweetbrier was brought to Canada by early British and United Empire Loyalist settlers. It forms a much branched bushy shrub five to six feet tall with bright pink flowers followed by orange-red oval fruits. It is chiefly grown for the fragrance of its foliage.

R. foetida, Herrm. The Austrian brier has long been cultivated in Europe and is responsible for all the yellow colour in our Hybrid Tea and Pernetiana roses of today. The slender brown stems are often almost like those of a rambler. The large deep yellow flowers have an unpleasant odour and are followed by red globular fruits. The Austrian Copper rose is a colour variation with brilliant copper red petals that are yellow on the outside.

R. gallica, L. The Provins, or French rose, has been cultivated for centuries and was brought to Canada at a very early time in our history. It spreads rapidly by underground root-stocks and forms a mass of canes to a height of about four feet. The flowers are very double, pink to red in colour and are followed by brick-red fruits.

R. Hugonis, Hensl. This central China species is not sufficiently hardy at Ottawa but in milder districts forms a large arching shrub of very graceful habit and is one of the most attractive species. It blooms early and has large single pale-yellow flowers in great profusion. The fruits are flattened-globe-shaped and deep scarlet in colour.

R. laxa, Retz. A native of Siberia. It is covered with white flowers, followed by orange fruits which turn dark red as they ripen. It forms a very ornamental shrub to five feet in height.

R. moschata, Herrm. The Musk rose. A shrub with arching branches which form a graceful mound wherever it is sufficiently hardy. This was an old favourite and was a parent of our original climbers.

R. Moyesii, Hensl. and Wils. This rose needs protection in most parts of Canada and so is rarely seen in its full beauty. Where it is perfectly hardy it forms a tall shrub to eight feet and is covered with blood-red flowers, followed by very long orange-red bottle-necked fruits. The foliage is very fine in texture, each leaf being formed of many small leaflets.

R. nitida, Willd. A dwarf native rose one to two feet high with dense prickly branches. The rose-coloured flowers are followed by small red fruits and the foliage also turns brilliant red in autumn.

R. nutkana, Presl. An upright shrub of medium height which is native to our northwest and consequently very hardy. It produces large pink flowers, followed by shining red fruits.

R. palustris, Marsh. The swamp pasture rose of Nova Scotia. It has slender rather smooth reddish stems and pink flowers in clusters.

R. pendulina, L. (*R. alpina*). This low shrub has almost smooth stems. The purplish-pink flowers are in small clusters and are followed by blood-red bottle-necked fruits about an inch long. The variety *pyrenaica* has smooth stems and very conspicuous fruits.

R. rubrifolia, Vill. The red-leaved rose is chiefly cultivated for the colour of its red- or purplish-tinted foliage and stems, which are very ornamental. The flowers are bright red with a white centre. They are rather small and are followed by smooth globular red fruits. It is very hardy and a useful shrub.

R. rugosa Thunb. The Japanese fruiting rose is one of the best known and most useful shrub roses. It forms an erect shrub to six feet with dense thickly bristled stems. The foliage is leathery, crinkled and shiny. It has large white, to purplish-red flowers, followed by bright-red flattened-globe-shaped fruits almost an inch in diameter. There have been many fine varieties of this rose developed through crossing with garden roses and other species, which are discussed later.

R. spinosissima, L. The Scotch roses have been cultivated for centuries and there are many old varieties developed from this species. It forms a low spreading shrub with densely prickled branches bearing an abundance of flowers from white to quite deep pink. There is also a yellow variety. The fruits are black or brown and flattened-globe-shaped. The variety *altaica* is one of the most attractive shrub roses, forming an erect shrub to six feet with large creamy-white flowers. It is among the hardiest species.

R. virginiana, Mill. (*R. lucida*). Native to Newfoundland and the Maritimes. Very like *R. blanda* and frequently described as a variety of it. It has attractive shiny foliage and bright pink flowers which are later than most wild roses.

R. xanthina, Lindl. A north China species of fairly recent introduction. It has stout brown stems with strong straight thorns. The semi-double flowers are yellow in colour. It is only hardy in milder districts of Canada.

Hybrids of different rose species are among the most valuable of shrub roses and particularly useful in the colder districts where the garden roses are not sufficiently hardy to survive without excessive care. There are, of course, degrees of hardiness in these but any described in the following notes are sufficiently hardy to survive at Ottawa without winter protection.

Among the most popular roses of this class are the hybrid *rugosa* roses, which may be divided into two classes, (a) those like Conrad F. Meyer, which is somewhat similar in bloom to a Hybrid Perpetual and can almost be used as such, and (b) those which are crosses between *rugosa* and other hardy species, which are truly hardy shrubby roses with single or semi-double flowers.

Varieties of the first type of *rugosa* hybrids are quite commonly known, and described in nursery catalogues so that no description is needed here. However, there have been several varieties of the second class developed in or introduced into Canada in recent years, which are so useful in the north and the Prairie Provinces that space is given here to brief descriptions of them, along with hybrids of other species.

Agnes, C.E.F. Ottawa. *R. rugosa* × Persian Yellow. A very hardy rose with double pale amber-yellow flowers borne in great profusion. The habit and foliage is much like *rugosa*. It is an early bloomer and a very useful addition to the shrub border.

Algonquin, C.E.F. Ottawa R28-13-02 seedling of a former hybrid of *R. rubrifolia* × *R. rugosa*. The foliage is large and dull yellow-green in colour. The large flat single flowers are purplish-rose, shading to white at the centre. It has large bottle-shaped red fruits that are very ornamental.

Alika. A hardy form of *gallica grandiflora* imported from Russia. It has double brilliant red flowers, is very fragrant and an excellent rose for low shrubbery.

Betty Bland. F. L. Skinner, Dropmore, Manitoba. A seedling of *R. blanda*. This reaches a height of five to six feet and has attractive red stems. The double pink flowers are large and freely borne.

Banshee. A rose of unknown origin, having very fragrant double pink flowers in profusion.

Carmenetta. C.E.F. Ottawa. *R. rubrifolia* × *R. rugosa*. A large shrub eight to ten feet high and very hardy. The large leaves are similar to those of *rugosa* in texture but are of a reddish colour overlaid with green. The rather small pale pink flowers are borne in clusters. This is useful as a large shrub but too coarse for a rose garden.

Cree. C.E.F. Ottawa. *R. rugosa alba plena* × *R. spinosissima hispida*. This makes a handsome shrub with glossy bright green leaves, with seven leaflets. The large single flowers are pale pink on opening, fading to white. It blooms early and is perfectly hardy at Ottawa.

Dr. Merkeley. This is related to the Cinnamon rose. It has deep pink, fragrant, double flowers in July and only grows about two feet high.

Dr. Mills. A hybrid of *R. Hugonis*, also showing *rugosa* ancestry. It is hardier than *Hugonis*, though it has many of its characteristics. The semi-double flowers are pale primrose yellow, flushed pink.

Hansa, *rugosa* hybrid. Flowers large, double, fragrant, produced freely throughout the season; a very strong growing thorny plant which has large red fruits. It is said to be the hardiest on the prairies.

Harison's Yellow. *R.* × *Harisonii*, a cross between *R. foetida* and *spinosissima*. It has been cultivated so long and is so wide-spread in Canada that its pale yellow semi-double blooms are familiar to all.

Huron. C.E.F. Ottawa. *R. cinnamomea* × *spinosissima* var. *Pythagoras*. A small compact shrub to two and a half feet tall. The pale pink flush on the semi-double white flowers is very attractive.

Iroquois. C.E.F. Ottawa. *R. cinnamomea* × *spinosissima* var. *Pythagoras*. A larger bush than Huron. The colour of the flowers is deep mauvish-pink and not particularly attractive but as deep coloured flowers are rare in roses of this class it has a place.

Kamtschatka. A geographic variation of *R. rugosa* which is proving hardier than the species in the West. It has smaller flowers and thinner leaves than the species.

Micmac. C.E.F. Ottawa. Seedling of *R. rubrifolia* × *rugosa*. The foliage of this plant is deep purplish-red, much richer than that of any other rose grown at the Central Experimental Farm. The flowers are white and borne in clusters. It forms an open shrub about four feet tall.

Millicent. C.E.F. Ottawa. *R. rubrifolia* × *Harisonii*. The foliage of this is dark green with red-brown veins. The shrub is of medium height, with light coral-red flowers which fade to flesh-pink on the inside and yellowish outside. The fruit is a flattened globe, light red in colour.

Mohawk. C.E.F. Ottawa. Seedling of *R. rubrifolia* × *rugosa*. A rounded dwarf shrub with dull green leaves and single flowers of a colour brighter than Ridgeways Aster Purple. The centre of the flower is white. The crop of bloom is profuse but unfortunately it sets few fruits.

Orinda. C.E.F. Ottawa. Open fertilized seedling of *R.* × *Harisonii*. A fine large shrub about six feet tall which holds its foliage until late in the fall. The flowers are medium in size, deep cream and semi-double.

Persian Yellow. An old variety of unknown date of origin but obviously from *R. foetida*. This is a grand old rose that needs no description.

Poliarchus. C.E.F. Ottawa. Open fertilized seedling of *R.* × *Harisonii*. A spreading shrub about four feet tall. Flowers are creamy-flushed-salmon and fade rapidly, on opening to cream. Flowers for two weeks in mid June.

Stanwell Perpetual. A low growing, very thorny hybrid rose popular on the Prairies. It has medium size, fragrant, blush flowers and bears a good second bloom in late summer.

Tetonkaha. A deep pink double rose of good fragrance. It is hardy and a useful addition as a low shrub. It suckers freely and is hardier when grown on its own roots.

U. P. Hedrick. C.E.F. Ottawa. An open fertilized seedling of *R. spinosissima altaica*. A vigorous bush with abundant dark green foliage. The stems are reddish-brown and the plant has some resemblance to *R. blanda*. The flowers are single, large and pink.

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Frequent reference has also been made to the annual reports of the National Rose Society of England and to the Rose Manual by the late J. H. Nicholas, the latter being used particularly in preparation of the first chapter on the various classes of garden roses.

